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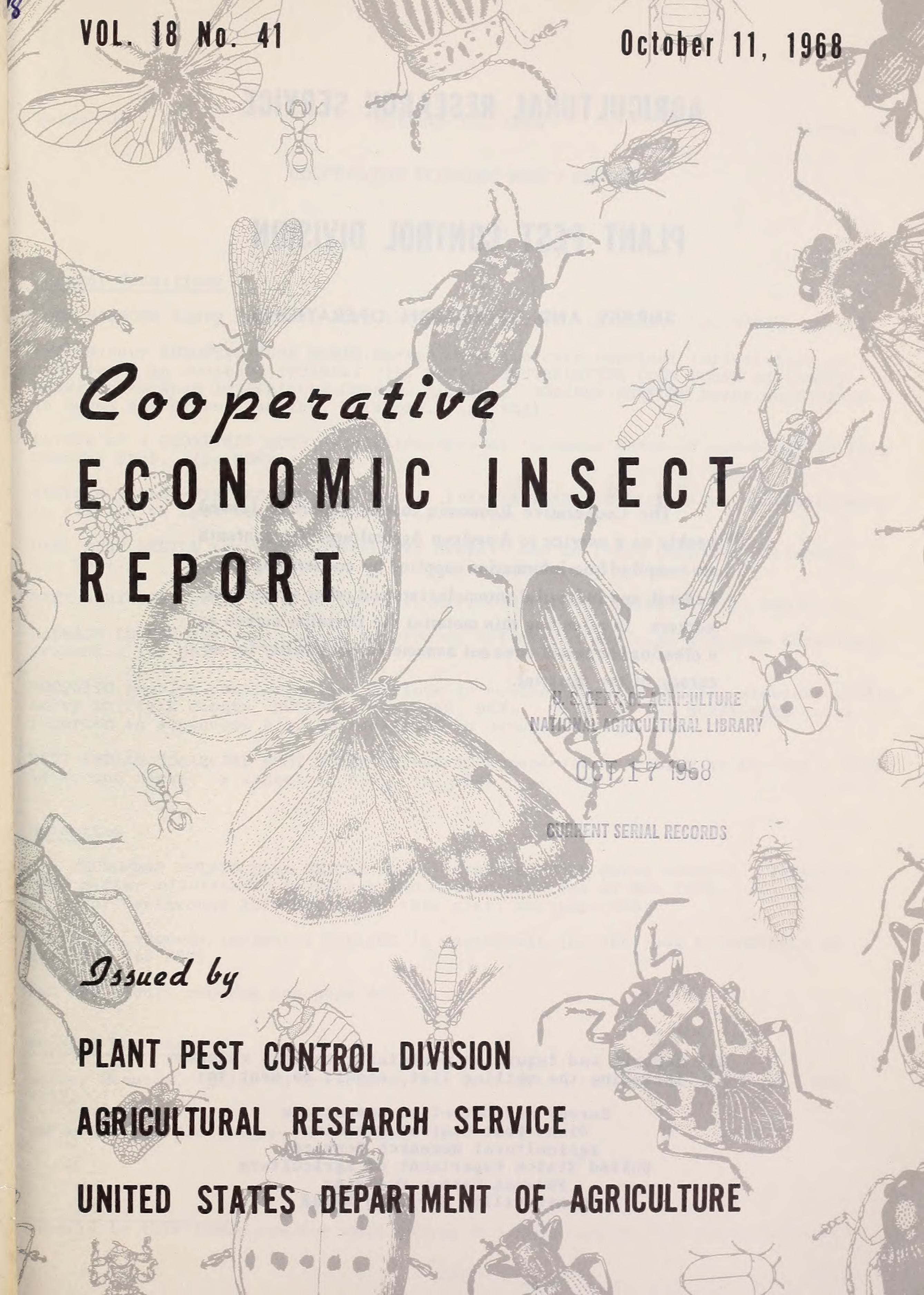

Cooperative
ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 18 October 11, 1968 Number 41

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN EARWORM heavy in field corn in Yavapai County, Arizona. (p. 957).

Preliminary EUROPEAN CORN BORER survey data indicate heaviest infestations in many years in southern Indiana. (p. 957). SOUTHWESTERN CORN BORER extremely heavy on sorghum in Maricopa County, Arizona. SORGHUM WEBWORM heavy on sorghum in Mayes and Bryan Counties, Oklahoma. (p. 958).

Larvae of a GEOMETRID MOTH defoliated several thousand acres of scrub oak in Iron County, Utah. (p. 958).

WESTERN YELLOW-STRIPED ARMYWORM larval infestations and migrations continue heavy in alfalfa in Lyon County, Nevada. (p. 959).

BEAN LEAF BEETLE heavy on soybeans in Haskell and La Flore Counties, Oklahoma. (p. 960).

BEET ARMYWORM heavy on sugarbeets in Maricopa County, Arizona. (p. 960).

CABBAGE LOOPER continues major problem on lettuce in Maricopa and Yuma Counties, Arizona. (p. 961).

MOSQUITO problem continues very serious in southern Mobile County, Alabama; adults heavy in Clark County, Nevada. (pp. 962, 963). Total of 661 SCREW-WORM cases reported in southwest U.S. September 28 to October 4. (p. 963).

WEST INDIAN SUGARCANE ROOT BORER infestation reported on citrus in Florida. This is second report of insect in U.S. (p. 964).

Detection

● EUROPEAN POTATO FLEA BEETLE found established in North America. Infested bitter nightshade in Albany and Greene Counties of New York. (p. 960). For background information on this pest, see page 965.

New State records include a BILLBUG in California (p. 958) and a CADDISFLY in Maryland (p. 967).

For new county records see page 967.

Special Reports

Survey Methods. Selected References for Last Half of 1967. Part XI (pp. 969-974).

White-Fringed Beetle Quarantine Map. Centerfold.

Reports in this issue are for week ending October 4 unless otherwise indicated.

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White-Fringed Beetle Quarantine Map. Centerfold.

WEATHER OF THE WEEK ENDING OCTOBER 7

HIGHLIGHTS: The first major cold outbreak brought freezing temperatures to central United States. Thundershowers occurred over most of the East and snow fell in the northern and central Rockies.

PRECIPITATION: Sparse showers occurred over the central Great Plains and parts of the Southeast early in the week but the first important precipitation fell as snow in the central Rockies and as cold rain in the northern Great Plains on Wednesday. In some areas, the rain and snow were driven by winds gusting to 45 to 50 m.p.h. Thunderstorms developed in the gulf air ahead of a cold front, occurring in the Great Lakes region and the Ohio River Valley on Wednesday and Wednesday night and from Texas to New England on Thursday. Sleet fell in central Iowa and the remnants of tropical storm Pauline brought heavy rains to parts of the usually dry Southwest. A tornado injured several persons and caused extensive property damage at Glendale, Arizona, Thursday night. Generous showers fell in the central United States on Saturday and from the Mississippi River to the Atlantic Ocean on Sunday. At the end of the week, a Pacific storm edged into the Far Northwest and snow began to fall in Montana. Weather of the week continued on page 966.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN EARWORM (Heliothis zea) - NEW JERSEY - Moths increased sharply in blacklight traps at Seabrook and Cedarville. Recommended scheduled controls to continue on lettuce. (Ins.-Dis. Newsltr.). SOUTH CAROLINA - This species and Spodoptera frugiperda (fall armyworm) main soybean pests week ending September 25. Light to severe in many counties. H. zea, S. frugiperda, and Anticarsia gemmatalis (velvetbean caterpillar) damaging soybeans in Piedmont area week ending October 2. Control not necessary as dry weather already reduced yield in southern area. These species still threat in Greenwood and Newberry Counties. (Thomas). KANSAS - H. zea infested all of commercial sweet corn planting in Riley County. (Simpson). OKLAHOMA - Ranged up to 7 per ear in late sweet corn in Mayes County; infested all ears checked. (Okla. Coop. Sur.). ARIZONA - Heavy in field corn in Chino Valley, Yavapai County. (Ariz. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Light on grain sorghum in Quay and Curry Counties. (Mathews). NEBRASKA - Ranged 0-18 (average 8) per row foot on 11 wheatfields in Lancaster, Seward, Otoe, Saline, Fillmore, Clay, and Adams Counties; light on corn. (Keith, Roselle). SOUTH DAKOTA - This species and R. fitchii (apple grain aphid) very light on winter wheat examined in Gregory, Tripp, Todd, Bennett, Washabaugh, Jackson, and Pennington Counties. (Kantack).

GREENBUG (Schizaphis graminum (In broad sense))* - SOUTH DAKOTA - Trace numbers, one per 25 plants, on winter wheat near Witten, Tripp County, and west of Mission, Todd County. Negative in other winter wheat checked in Gregory, Tripp, Todd, Bennett, Washabaugh, Jackson, and Pennington Counties. (Kantack). NEBRASKA - Generally light in 2 to 4-inch-tall wheat in southeastern, eastern, and southern areas. Ranged 0-16 (average 7) per row foot in 11 wheatfields checked in Lancaster, Seward, Otoe, Saline, Fillmore, Clay, and Adams Counties. (Keith et al.). Active in wheat in Platte County. (Kantor). KANSAS - Trace numbers on Greeley County sorghum week of September 23. (Brooks). OKLAHOMA - Averaged 4 per row foot in 6 to 10-inch wheat in Ottawa County field; light in wheat in Bryan County. (Okla. Coop. Sur.).

POTATO LEAFHOPPER (Empoasca fabae) - VIRGINIA - Nymphs and adults numerous, yellowed alfalfa field in Botetourt County. (Allen).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OREGON - Alates and nymphs averaged less than 5 per sweep in alfalfa at Jacksonville, Jackson County; heavier at field margins. (Westcott). ARIZONA - Alates and colonies unusually numerous on 3 recently cut alfalfa fields in Perryville area, Maricopa County; only known area in county where heavy numbers exist despite treatment. Alates up to 10 per stem on some cut stems; unusual for time of year. (Ariz. Coop. Sur.). OKLAHOMA - Counts per 10 sweeps in alfalfa ranged 10-100 in Muskogee and Sequoyah Counties, 5-15 in Ottawa and Delaware Counties, and averaged 40 in Tillman County. (Okla. Coop. Sur.). SOUTH DAKOTA - Heavier, up to 150-200 per 100 sweeps, in field of 7 to 9-inch green alfalfa east of Spearfish, Lawrence County. (Jones). VIRGINIA - Averaged 1,500 per 100 sweeps in alfalfa field in Botetourt County. (Allen).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - INDIANA - Larvae averaged 99.97 per 100 plants and plant infestations averaged 50.89 percent during annual fall survey on corn in southern quarter of State. Preliminary survey data indicate heaviest infestations in many years in south-southcentral and south-southwest districts. (Huber, Sept. 27). MINNESOTA - Second-generation third to fifth instars on corn in south-central district; mostly fourth and fifth instars.

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*According to recent taxonomic studies by L.M. Russell. This aphid on sorghum appears to be this species.

Second generation often in corn ears; ear infestations ranged 60-90 percent in Martin County. (Minn. Ins. Rpt., Sept. 27). SOUTH DAKOTA - Fall abundance survey completed in Brookings, Moody, and Minnehaha Counties. Increases noted on corn in Brookings and Moody Counties compared with 1967. (Jones).

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - ARIZONA - Larvae extremely heavy, up to 5 per plant, in much late-planted, second-regrowth sorghum in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). OKLAHOMA - Damaged 40 percent of late sweet corn ears in Mayes County; boring at base of ear. (Okla. Coop. Sur.).

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) - ARIZONA - Damage heavy to quarter field of late-planted sorghum at Yuma, Yuma County; boring noted in every stalk examined. Remaining 80 acres planted early in excellent condition. (Ariz. Coop. Sur.).

SORGHUM WEBWORM (*Celama sorghiella*) - OKLAHOMA - Averaged 8 per head in late grain sorghum in Tulsa County and 4 per head in Delaware County. Heavy on grain sorghum in Mayes and Bryan Counties. (Okla. Coop. Sur.).

FALL ARMYWORM (*Spodoptera frugiperda*) - KANSAS - Larvae averaged less than 1 per 100 ears of sweet corn in Riley County. (Simpson).

WESTERN CORN ROOTWORM (*Diabrotica virgifera*) - ARIZONA - Adults collected in field corn on ranch at Kirkland, Yavapai County, by J. May. Determined by R.E. White. This is a new county record. (Ariz. Coop. Sur.).

CORN ROOTWORMS (*Diabrotica* spp.) - MINNESOTA - *D. longicornis* and *D. virgifera* adults still active, but rapidly leaving drying cornfields. Adults on almost every blooming plant. (Minn. Ins. Rpt., Sept. 27).

STRAWBERRY SPIDER MITE (*Tetranychus atlanticus*) - ARIZONA - Very heavy in many sorghum fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - KANSAS - Trapped 10,000+ moths in blacklight trap October 1 at Hugoton, Stevens County, and 3,000 September 30 at Garden City, Finney County. (Simpson).

WHITE GRUBS (*Phyllophaga* spp.) - MICHIGAN - Damaging fall-planted wheat in Montcalm County. Land still to be planted will be treated. (Janes, Oct. 1).

TURF, PASTURES, RANGELAND

A BILLBUG (*Sphenophorus venatus vestitus*) - CALIFORNIA - Adults medium on golf course greens at Ontario, San Bernardino County. Collected by G. Harper July 30, 1968. Determined by R.E. Warner. This is a new State record. (Cal. Coop. Rpt.).

A GEOMETRID MOTH (*Hydriomena similaris terminipunctata*) - UTAH - Larvae defoliated several thousand acres of scrub oak in Cedar Mountain area of Iron County. Adults collected by W. Sjoblom. Determined by E.L. Todd. (Thornley, Sept. 30).

WESTERN FLOWER THRIPS (*Frankliniella occidentalis*) - UTAH - Extremely numerous in rabbitbrush blossoms in Wellsville and Logan Canyons, Cache County. *Orius tristicolor* (a flower bug) very numerous in same areas. (Knowlton, Sept. 30).

FORAGE LEGUMES

YELLOW-STRIPED ARMYWORMS (Prodenia spp.) - NEVADA - P. praefica larval infestations and migrations continue heavy in alfalfa in Smith and Mason Valleys, Lyon County. No regrowth occurred after third cutting in many fields due to heavy populations. Damage heavy on several late-cut fields. (Smith). VIRGINIA - Small P. ornithogalli larvae ranged 5-10 per 100 sweeps in alfalfa field in Roanoke County. (Allen).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Counts per 100 sweeps in alfalfa averaged 100 on west side of Maricopa County and 350 in Yuma and Parker areas, Yuma County; 2,000 per 100 sweeps in one field in Yuma County. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - COLORADO - Larvae ranged 30-40 per 100 sweeps in alfalfa in Weld County. (Johnson). NEW MEXICO - Larvae averaged 1-5 per 25 sweeps in alfalfa at Corrales, Sandoval County. (Heninger).

PEA APHID (Acyrthosiphon pisum) - OREGON - Averaged 25-50 per sweep in several alfalfa fields in Jackson and Douglas Counties. (Westcott). COLORADO - Averaged 500-1,000 per 100 sweeps in alfalfa in Weld County. (Johnson). NEW MEXICO - Generally light in alfalfa in Dona Ana and Sandoval Counties. (Heninger et al.). OKLAHOMA - Counts per 10 sweeps in alfalfa averaged 250 in Ottawa County and 5 in Delaware County. (Okla. Coop. Sur.). VIRGINIA - Generally light to moderate in alfalfa in Montgomery and Roanoke Counties; up to 1,000 per 100 sweeps in one field. (Allen).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Increasing, averaged 450 per 100 sweeps in alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.). OKLAHOMA - Counts per 10 sweeps in alfalfa averaged 24 in Tillman County, 12 in Ottawa County, and one in Delaware County. (Okla. Coop. Sur.).

MEADOW SPITTLEBUG (Philaenus spumarius) - VIRGINIA - Adults moderate, 30-55 per 100 sweeps, in alfalfa in Montgomery, Roanoke, and Botetourt Counties. (Allen).

ALFALFA WEEVIL (Hypera postica) - NEW MEXICO - Larvae averaged 1-8 per 25 sweeps in alfalfa at Corrales, Sandoval County. (Heninger). COLORADO - Larvae 30-50 per 100 sweeps in few alfalfa fields in Weld County. (Johnson). SOUTH DAKOTA - Adults light, one per 100 sweeps, in alfalfa east of Spearfish, Lawrence County. Alfalfa growth 3-12 inches. (Jones). VIRGINIA - Larvae light in alfalfa in Roanoke, Montgomery, and Botetourt Counties. Third instars ranged 50-100 per 100 sweeps in field in Roanoke County. (Allen).

LYGUS BUGS (Lygus spp.) - ARIZONA - Adults per 100 sweeps in alfalfa averaged 230 in 80-acre field at Cashion, Maricopa County, 30 at Casa Grande, Pinal County, and 175 in Yuma County. (Ariz. Coop. Sur.). VIRGINIA - L. lineolaris adults 20-45 per 100 sweeps in alfalfa in Roanoke and Botetourt Counties. (Allen).

GRAY GARDEN SLUG (Deroceras reticulatum) - OREGON - Large acreages of crimson clover replanted near Hillsboro, Washington County, probably due mainly to this species. (Goeden).

SOYBEANS

GREEN CLOVERWORM (Plathypena scabra) - ALABAMA - Predominant pest in yellowing field near Foley, Baldwin County; 140 taken in 3 row feet. Also collected 18 Anticarsia gemmatalis, 9 Heliothis spp., 12 Nezara viridula, 3 Trichoplusia ni, 5 Pseudoplusia includens, 9 Spissistilus festinus nymphs, 5 Prodenia ornithogalli, and many other specimens in 3 row feet from this field; over 207 leaf and pod feeders present. Collected about 500 unspecified larvae per 3 row feet (2,250,000 per acre) in another field. Insects very high in many late-planted fields around Foley. Some controls applied in Clark County. (Wilson et al.). OKLAHOMA - P. scabra 10-25 per 10 sweeps in Haskell and Le Flore Counties. (Okla. Coop. Sur.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - OKLAHOMA - Heavy in Haskell and Le Flore Counties; moderate in Mayes County. (Okla. Coop. Sur.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - SOUTH CAROLINA - Damage noted throughout southern area. (Thomas, Sept. 25).

COTTON

BOLL WEEVIL (Anthonomus grandis) - NEW MEXICO - Negative in all fields inspected in southern Dona Ana County. (Campbell, Elson).

COTTON APHID (Aphis gossypii) - NEW MEXICO - Being controlled by high populations of beneficial species in southern Dona Ana County. (Campbell, Elson).

SUGARBEETS

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Heavy, feeding in crowns in many fields in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

EUROPEAN POTATO FLEA BEETLE (Psylliodes affinis (Paykull)) - NEW YORK - Collected on bitter nightshade (Solanum dulcamara) in several places in Albany and Greene Counties during July 1968. Collected and determined by R.W. Flowers and J.A. Wilcox, confirmed by R.E. White. This is a new North American record. (Flowers, Wilcox). P. affinis is found on belladonna, bitter nightshade, black henbane, Lycium sp., potato, tobacco, tomato, other solanaceous plants, and hops. This species is known to occur in the Soviet Union and throughout most of Europe. (PPC). For background report, see page 965.

TOMATO PINWORM (Keiferia lycopersicella) - CALIFORNIA - Larvae medium in 2-acre tomato field in Reedley, Fresno County. Very light in 1968. (Cal. Coop. Rpt.).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - ALABAMA - Larvae and adults continue heavy on abandoned beans and peas in gardens statewide. Feeding and development continues on soybeans and to lesser extent on kudzu. (Blake et al.).

COWPEA CURCULIO (Chalcodermus aeneus) - ALABAMA - Egg laying very heavy past 2 weeks on peas in Lee County gardens. Many "patches" of abandoned peas providing excellent breeding area for development of large overwintering populations. (Blake et al.).

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - COLORADO - Larvae damaged pinto beans in Dove Creek area, Dolores County. (Alexander, Hantsbarger).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - CALIFORNIA - Medium on bean plantings at Napa, Napa County. (Cal. Coop. Rpt.).

CUCURBITS

LEAFHOPPERS (Empoasca spp.) - ARIZONA - Heavy on 80 acres of cantaloups at Gila Bend, Maricopa County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Continues major problem on lettuce in Maricopa and Yuma Counties. Egg laying so heavy, maintenance of regular spray program necessary to kill larvae. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

LESSER PEACH TREE BORER (Synanthedon pictipes) - INDIANA - Male captures low in orchard at Vincennes; caught 6 on five consecutive cool days and 78 over warm weekend. (Dolphin, Sept. 30).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - OKLAHOMA - Heavy in peaches in Mayes County. (Okla. Coop. Sur.). INDIANA - Adults low in bait jars at Vincennes; decreased from 515 to 69 in two weeks. (Dolphin, Sept. 30).

CODLING MOTH (Carpocapsa pomonella) - INDIANA - Adults still light at Vincennes; 10 males taken during week (56 previous week) in sex lure traps. (Dolphin, Sept. 30).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - INDIANA - Collected 696 males during week in 36 virgin female traps (10 females per trap) despite cool weather at Vincennes; 669 taken previous week. (Dolphin, Sept. 30).

SAN JOSE SCALE (Aspidiotus perniciosus) - CALIFORNIA - Medium on Bartlett pear nursery stock at Sacramento, Sacramento County. (Cal. Coop. Rpt.).

APPLE MAGGOT (Rhagoletis pomonella) - INDIANA - Adult captures on stickyboards progressively lower each week at Vincennes; 31 taken week ending September 30. (Dolphin).

PEAR-SLUG (Caliroa cerasi) - CALIFORNIA - Locally heavy on pear trees in Cambria Pines, San Luis Obispo County. Populations remained late in season in 1968. (Cal. Coop. Rpt.).

APHIDS - ALABAMA - Monellia spp. and Myzocallis caryaefoliae continue heavy on unsprayed pecan trees in Covington, Dallas, Lee, and other southern counties. Aphid and mite damage with extremely dry conditions caused much defoliation. (Linder et al.).

FALL WEBWORM (Hyphantria cunea) - ALABAMA - Foliar feeding and webbing heavy in most pecan trees in Tallapoosa County. (Pinion).

CITRUS

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Medium at Fremont, Alameda County. Very damaging on citrus in northern area this season. Parasite activity very light. (Cal. Coop. Rpt.).

CITRUS RED MITE (Panonychus citri) - ARIZONA - Buildup begun in some groves at Yuma, Yuma County. (Ariz. Coop. Sur.).

ORNAMENTALS

AZALEA BARK SCALE (Eriococcus azaleae) - OREGON - Infesting rhododendrons and azaleas at rhododendron test gardens in Portland. Leaves disfigured by sooty mold; bark on branches rough and malformed. Some plants stunted with some loss of twigs and branches. Present in Portland area since 1949. Has been found on State Capitol grounds. (Larson).

FOREST AND SHADE TREES

CONIFER APHIDS (Cinara spp.) - MARYLAND - C. strobi increasing on white pines throughout College Park area, Prince Georges County. (U. Md., Ent. Dept.). SOUTH DAKOTA - Probably Cinara spp. heavy on ponderosa pines near Hot Springs, Fall River County. (Wiedmeier). COLORADO - C. sabinae heavy on pinyon pines in Fort Collins area, Larimer County. (Kincaid).

A SOFT SCALE (Ehrhornia cupressi) - CALIFORNIA - All stages heavy on Arizona cypress in Highlands, San Bernardino County. (Cal. Coop. Rpt.).

HICKORY BARK BEETLE (Scolytus quadrispinosus) - IOWA - Contributing to death of large numbers of hickory trees in north-central area. Oviposition tunnels averaged 3 to 5 per square foot on trunks and larger branches. (Iowa Ins. Sur.).

ASIATIC OAK WEEVIL (Cyrtepistomus castaneus) - MISSOURI - Adults collected at lights in Gasconade and Franklin Counties for new county records. (Munson).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEW MEXICO - On elm tree at Lordsburg, Hidalgo County. Collected by J. Elson July 11. Determined by R.E. White. This is a new county record. (N.M. Coop. Rpt.).

A FLEA BEETLE (Altica torquata) - CALIFORNIA - Larvae and adults heavy on willow at Bishop, Inyo County. (Cal. Coop. Rpt.).

MIMOSA WEBWORM (Homadaula anisocentra) - OKLAHOMA - Leaf damage ranged 5-100 percent during survey of 9 counties in north-central, northeastern, and east-central areas. (Okla. Coop. Sur.).

FALL WEBWORM (Hyphantria cunea) - NEW MEXICO - Heavy damage on many trees in Dona Ana County. (Elson, Campbell).

APHIDS - CALIFORNIA - Thecabius populimonilis nymphs medium on Lombardy poplars in El Dorado Hills, El Dorado County. (Cal. Coop. Rpt.). COLORADO - Lachnus salignus remains heavy on willow in Fort Collins area, Larimer County. (Kincaid).

MAN AND ANIMALS

MOSQUITOES - ALABAMA - Aedes sollicitans problem very serious along coastal areas of Mobile County. Dense concentrations annoying people in Fowl River area for more than 6 weeks and in all other coastal areas for past month. Mosquitoes "took over" after local spray program at Dauphin Island discontinued more than 2 weeks ago. (Seibels). DISTRICT OF COLUMBIA - Psorophora confinnis collected by H. Sollers-

Riedel September 10. Mosquito was attempting to bite. Determined by A. Stone. Species not commonly found in area. (Sollers-Riedel). MICHIGAN - Mosquitoes continue annoying in State. (Janes, Oct. 1). NEVADA - A. dorsalis and A. vexans adults heavy in southeastern Las Vegas and at East Las Vegas, Clark County. Many complaints received. (Earnist). A. dorsalis, A. melanimon, A. nigromaculis, and A. vexans medium to heavy at Schurz, Mineral County. (Lynch, Sept. 24).

SCREW-WORM (Cochliomyia hominivorax) - Total of 661 cases reported in U.S. September 28 to October 4 as follows: TEXAS - Atascosa 13, Bandera 5, Bee 5, Bexar 3, Blanco 1, Brewster 18, Brooks 11, Burnet 1, Cameron 1, Coke 2, Coleman 1, Comal 1, Concho 2, Crockett 35, De Witt 2, Dimmit 20, Duval 3, Ector 1, Edwards 27, Frio 8, Gillespie 7, Goliad 1, Gonzales 1, Guadalupe 1, Hays 3, Hidalgo 13, Howard 1, Irion 1, Jeff Davis 13, Jim Hogg 2, Jim Wells 11, Karnes 2, Kendall 5, Kenedy 24, Kerr 4, Kimble 9, Kinney 39, Kleberg 2, Lampasas 5, La Salle 7, Maverick 11, McCulloch 1, Martin 3, Mason 2, Medina 17, Menard 1, Midland 1, McMullen 3, Motley 1, Nueces 4, Pecos 28, Presidio 15, Real 9, Reeves 3, Refugio 3, San Patricio 2, Schleicher 6, Shackelford 1, Starr 16, Sterling 2, Sutton 20, Swisher 1, Terrell 41, Tom Green 2, Travis 1, Upton 1, Uvalde 35, Val Verde 42, Ward 1, Webb 30, Willacy 3, Wilson 3, Winkler 2, Yoakum 1, Zapata 4, Zavala 19; ARIZONA - Graham 1, Pinal 4, Santa Cruz 2, Yavapai 1; CALIFORNIA - Riverside 2, San Diego 4; NEW MEXICO - Dona Ana 1. Total of 794 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 71, Sonora 136, Chihuahua 202, Coahuila 233, Nuevo Leon 103, Tamaulipas 49. Total of 65 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 96,118,000; New Mexico 2,180,000; Arizona 8,920,000; California 1,400,000; Mexico 78,080,000. (Anim. Health Div.).

HORN FLY (Haematobia irritans) - OKLAHOMA - Ranged 350-400 per head on cattle in Payne and Noble Counties. Moderate in Bryan and Cleveland Counties. (Okla. Coop. Sur.). MISSOURI - Averaged 387.5, 265.0, 197.0, 52.5, 372.5, 139.0, and 6.7 per cow (10-cow samples) on 7 central area farms. (Thomas). ILLINOIS - Averaged 76 per head in northeast area and 81 per head in west-southwest area. (Ill. Ins. Rpt.). VIRGINIA - Adults moderate on beef cattle herd in Craig County. (Allen).

STABLE FLY (Stomoxys calcitrans) - NEBRASKA - Averaged 10-15 per leg on 4 feedlot herds in Lancaster County. (Campbell). ILLINOIS - Averaged 4.2 per head in northeast area and 2.4 per head in west-southwest area. (Ill. Ins. Rpt.).

FACE FLY (Musca autumnalis) - MISSOURI - Averaged 0, 0, 0, 3.4, 0.5, 0.3, and 1.9 per face (10-cow samples) on 7 central area farms. (Thomas). ILLINOIS - Averaged 2.5 per face in northeast area and 6.8 per face in west-southwest area. (Ill. Ins. Rpt.). VIRGINIA - Adults annoying beef cattle herd in Craig County. (Allen).

HOUSE FLY (Musca domestica) - OKLAHOMA - Averaged 25 per scudder grid in 3 untreated barns in Payne County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - NEVADA - Heavy population severely damaged hardwood floor in home at Reno, Washoe County. Floor had to be replaced. (Ting).

STORED PRODUCTS

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - MICHIGAN - Mainly this species numerous in stored wheat and corn in State. (Janes, Oct. 1).

A DERMESTID BEETLE (Trogoderma parabile) - NEVADA - This and Tribolium castaneum (red flour beetle) light to medium in cotton seed meal, pelleted livestock feed, grass seed, and oat seed in Pahrump Valley, Nye County. (Bechtel et al.).

LESSER GRAIN BORER (Rhyzopertha dominica) - TENNESSEE - In stored oats in Davidson County. (Williams).

BENEFICIAL INSECTS

A PUNCTURE-VINE SEED WEEVIL (Microlarinus lareynii) - NEW MEXICO - Infested about 50 percent of seeds checked at Las Cruces, Dona Ana County. (Durkin).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - ARIZONA - Melanoplus spp. damage light to citrus foliage in Wellton area, Yuma County. Nymphs feeding in citrus nurseries and home plantings in Yuma and Maricopa Counties. (Ariz. Coop. Sur.). NEW MEXICO - Adults 1-3 per 25 sweeps in alfalfa at Corrales, Sandoval County. Heavy in weeds, flowers, and weedy orchards in Albuquerque, Bernalillo County. Heavy mortality due to Entomophthora sp., a fungus. (Heninger). NEBRASKA - Melanoplus spp. averaged 3-6 per square yard in wheatfield margins in southeastern, eastern, and southern areas. (Keith, Roselle). SOUTH DAKOTA - Control with an organic phosphate on field borders of winter wheat especially good at Quinn, Pennington County; up to 25-45 dead grasshoppers per square yard. Control good near Martin, Bennett County, and at Wall, Pennington County. M. bivittatus and M. differentialis present. (Kantack). MINNESOTA - Egg laying observed in central and south-central districts past week. M. femurrubrum and M. differentialis active in afternoons with warm temperatures. Some M. bivittatus found dead or in very poor condition. (Minn. Ins. Rpt., Sept. 30).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Control operations completed in Bard and Imperial Valleys, Imperial County, and in Palo Verde and Coachella Valleys, Riverside County. Individual growers may continue treatment. Two additional treatments considered in Riverside County district. Infestations about 15 and 23 percent in Imperial County and 21 percent in Palo Verde Valley and ranged 4.5-87.5 (average 30) percent in Coachella Valley, Riverside County. Sterile releases made on schedule at Borrego, San Diego County, and in Kern County . (Cal. Coop. Rpt.). NEVADA - Collected 4 males September 25 in sex lure traps in Pahrump Valley, Nye County. Two growers defoliated fields. (Bell, Yamashita, Sept. 27). Larval infestations averaged 14 percent in green bolls in Moapa Valley, Clark County. (Bechtel et al.). ARIZONA - Fewer larvae than in 1967 found in Yuma County lint cleaners. Larvae averaged 1 per 5 bolls in Pinal County. (Ariz. Coop. Sur.). NEW MEXICO - Larvae infested 0-12 percent of bolls during green boll survey in extreme southern Dona Ana County. Larval infestations ranged 0-6 percent from Canutillo, Texas, north to Caballo Dam. Collected 62 moths from 5 sex lure traps in heavily infested field October 3. (Campbell, Elson).

SOYBEAN CYST NEMATODE (Heterodera glycines) - NORTH CAROLINA - Infested soybeans at Plymouth, Washington County, and at Aurora, Beaufort County. Collected by W. J. Westcott April 26. Determined by A.M. Golden. These are new county records. (PPC).

WEST INDIAN SUGARCANE ROOT BORER (Diaprepes abbreviatus (Linnaeus)) - FLORIDA - Larvae discovered seriously damaging roots of citrus nursery stock at nursery in Apopka, Orange County, September 16, 1968. (Kipp et al.). Adults discovered in same area September 25, 1968. Only other United States record was single adult found feeding on citrus foliage at same nursery on September 25, 1964, by C.J. Musgrove. See CEIR 14(49):1270 for this report and additional information. This weevil is a pest of citrus and sugarcane in the West Indies and is regarded as a potential threat to these crops in the State. Appropriate regulatory measures are being taken by State and Federal authorities. (Fla. Coop. Sur. and PPC).

12. Brick, stone, concrete slabs, drainage pipes, and building blocks.
    Brick, stone, concrete slabs, drainage pipes, and building blocks are exempt** if not exposed to infestation in storage or if the storage site has been treated with an approved pesticide.

13. Forest products, such as pulpwood, stumpwood, logs, lumber, and crossties.
    Forest products, such as pulpwood, stumpwood, logs, lumber, and crossties are exempt** if not exposed to infestation in storage or if the storage site has been treated with an approved pesticide.

14. Used mechanized cultivating equipment and used harvesting machinery.

15. Used mechanized soil-moving equipment.

16. Any other products, articles, or means of conveyance, of any character whatsoever, not covered by the above when it is determined by an inspector that they present a hazard of spread of white-fringed beetles and the person in possession thereof has been so notified.

*Information as to designated laboratories and gins may be obtained from an inspector.

**Exempt if not exposed to infestation after cleaning or other prescribed handling.

WHITE - FRINGED BE

UNITED STATES DEPART
AGRICULTURAL RESEARCH SERVIC
COOPERATING WITH

COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED;

COUNTIES WITH COLORED DOT ARE PARTIALLY REGULATED.

🟥 GENERALLY INFESTED AREA - STATE AND FEDERAL REGULATIONS.
(ERADICATIVE TREATMENTS NOT IN PROGRESS OR PLANNED.)

🟩 SUPPRESSIVE AREA - STATE AND FEDERAL REGULATIONS.
(SUPPRESSIVE TREATMENTS IN PROGRESS OR PLANNED.)

🟦 STATE REGULATIONS ONLY.
(SUPPRESSIVE TREATMENTS IN PROGRESS OR PLANNED.)

RESTRICTIONS ARE IMPOSED ON THE MOVEMENT OF REGULATED ARTICLES FROM A REGULATED AREA AS FOLLOWS:

1. RED INTO OR THROUGH GREEN, BLUE, OR WHITE.
2. GREEN INTO OR THROUGH BLUE OR WHITE.
3. GREEN INTO GREEN.
4. GREEN WITHIN GREEN°
5. BLUE INTO ANY OTHER AREA°°

°WHEN IT IS DETERMINED BY THE INSPECTOR THAT A HAZARD OF SPREAD EXISTS.

°°ONLY WHEN REQUIRED BY STATE QUARANTINE REGULATIONS OR BY AN AUTHORIZED INSPECTOR.

SEE REVERSE SIDE FOR REQUIREMENTS CONCE

QUARANTINE

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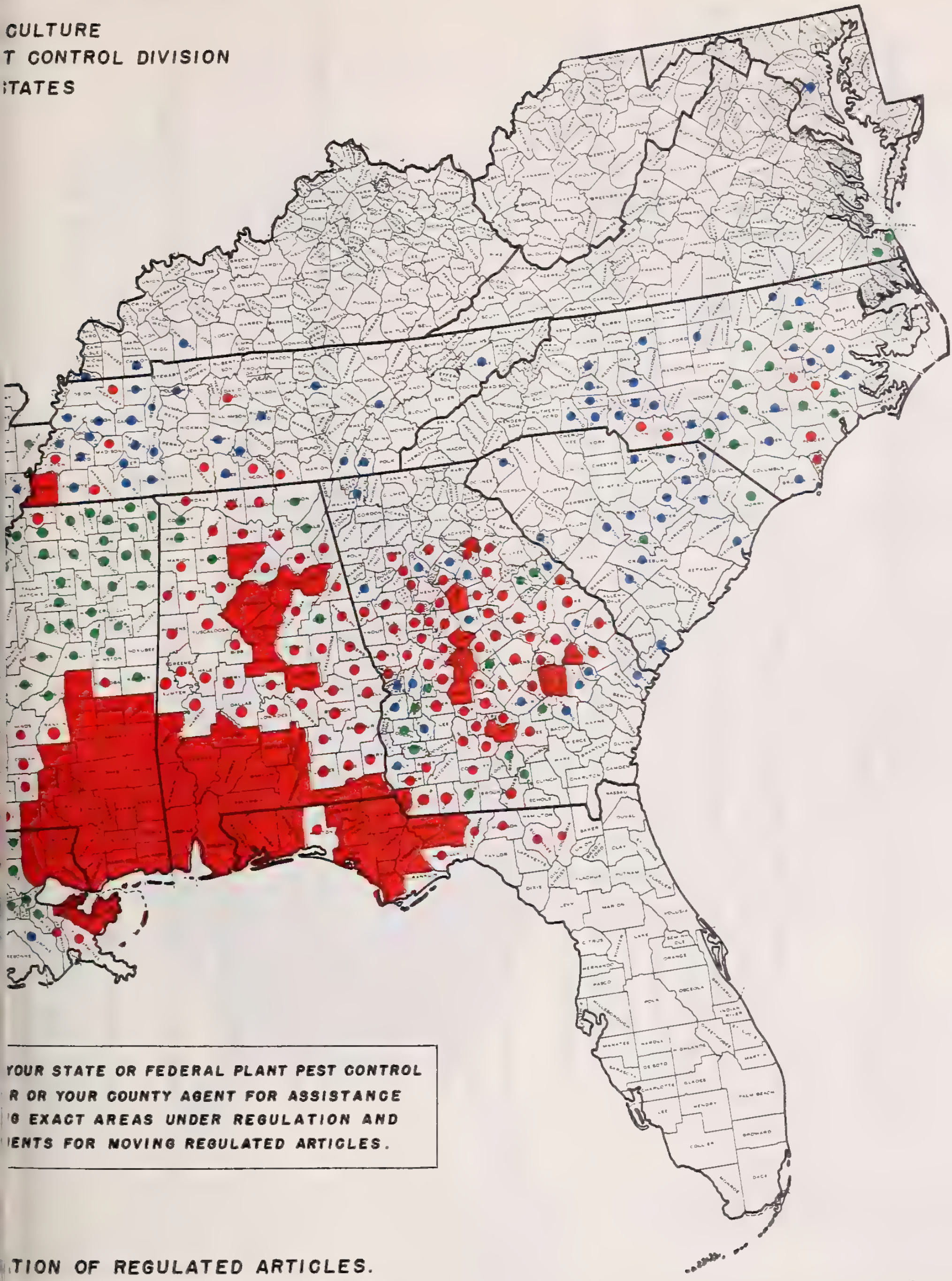

YOUR STATE OR FEDERAL PLANT PEST CONTROL
R OR YOUR COUNTY AGENT FOR ASSISTANCE
G EXACT AREAS UNDER REGULATION AND
ENTS FOR MOVING REGULATED ARTICLES.

TION OF REGULATED ARTICLES.

Revised April 15, 1968

WHITE - FRINGED BEETLE QUARANTINE

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE - PLANT PEST CONTROL DIVISION
COOPERATING WITH AFFECTED STATES

COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED;

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3. GREEN INTO GREEN.
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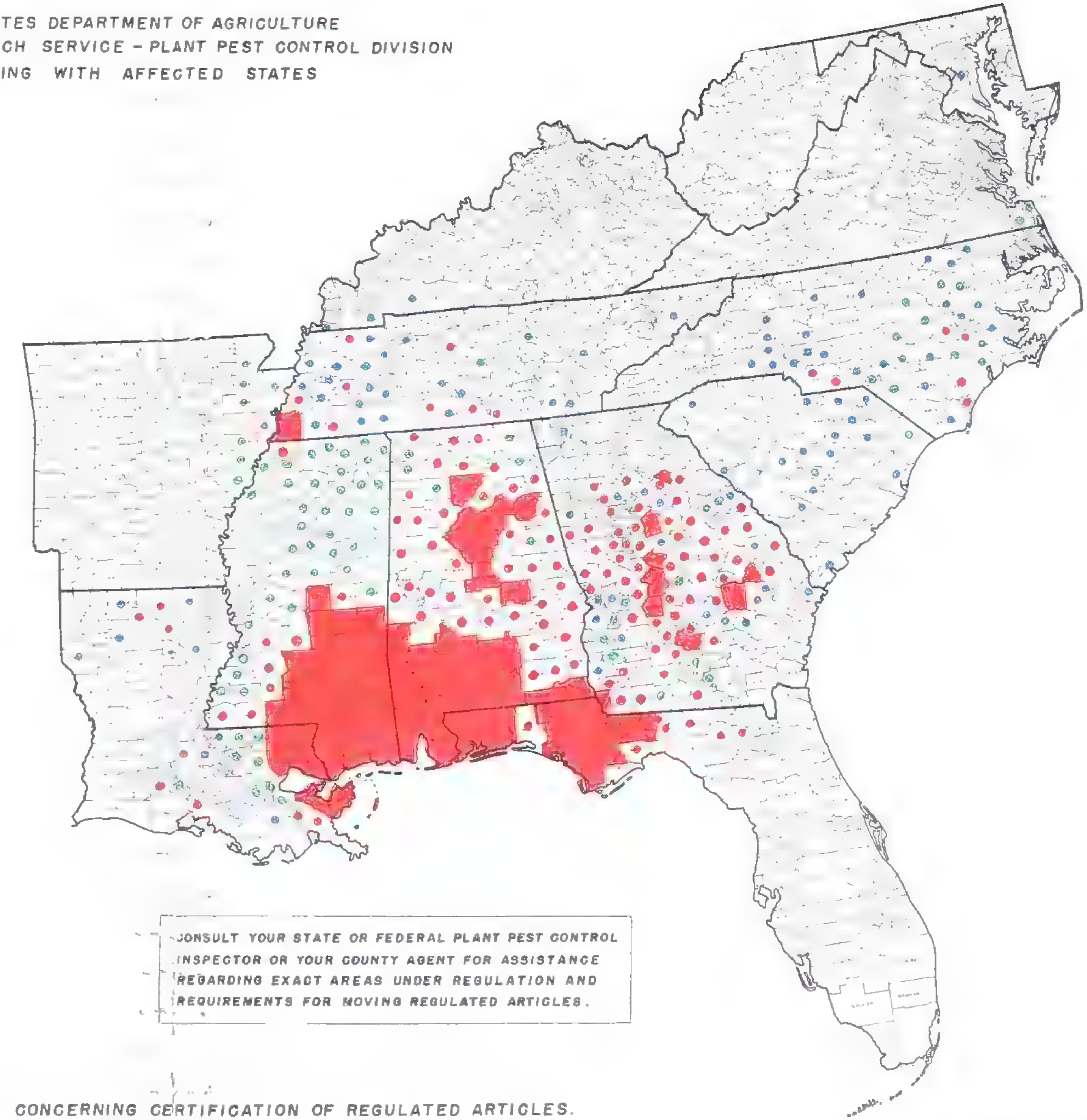
° WHEN IT IS DETERMINED BY THE INSPECTOR THAT A HAZARD OF SPREAD EXISTS.

°° ONLY WHEN REQUIRED BY STATE QUARANTINE REGULATIONS OR BY AN AUTHORIZED INSPECTOR.



CONSULT YOUR STATE OR FEDERAL PLANT PEST CONTROL INSPECTOR OR YOUR COUNTY AGENT FOR ASSISTANCE REGARDING EXACT AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

Revised April 15, 1968

THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED:

1. Soil, compost, decomposed manure, humus, muck, and peat, separately or with other things.
   Soil samples of one pound or less are exempt if shipped to a designated laboratory.*
   Soil samples of any size shipped to U.S. Army Corps of Engineers Soil Laboratories within the conterminous United States are exempt.
   Compost, decomposed manure, humus, and peat are exempt** if dehydrated, ground, pulverized, or compressed.

2. Plants with roots.

3. Grass sod.

4. Plant crowns and roots for propagation.

5. True bulbs, corms, rhizomes, and tubers of ornamental plants when freshly harvested or uncured.

6. Potatoes (Irish) when freshly harvested.

7. Peanuts in shells and peanut shells, except boiled or roasted peanuts.

8. Uncleaned grass, grain, and legume seed.

9. Hay and straw.

10. Seed cotton.
    Seed cotton is exempt** if moving to a designated gin.*

11. Scrap metal and junk.

12. Brick, stone, concrete slabs, drainage pipes, and building blocks.
    Brick, stone, concrete slabs, drainage pipes, and building blocks are exempt** if not exposed to infestation in storage or if the storage site has been treated with an approved pesticide.

13. Forest products, such as pulpwood, stumpwood, logs, lumber, and crossties.
    Forest products, such as pulpwood, stumpwood, logs, lumber, and crossties are exempt** if not exposed to infestation in storage or if the storage site has been treated with an approved pesticide.

14. Used mechanized cultivating equipment and used harvesting machinery.

15. Used mechanized soil-moving equipment.

16. Any other products, articles, or means of conveyance, of any character whatsoever, not covered by the above when it is determined by an inspector that they present a hazard of spread of white-fringed beetles and the person in possession thereof has been so notified.

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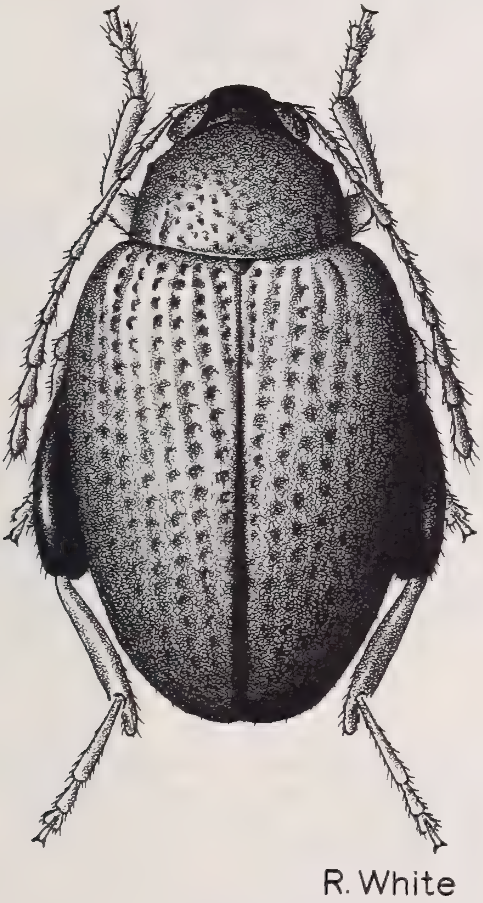
9. Hay and straw.

10. Seed cotton.

EUROPEAN POTATO FLEA BEETLE (*Psylliodes affinis* (Paykull))

Economic Importance - This small beetle was found in July 1968 on bitter nightshade in Albany and Greene Counties, New York. On occasion, it is an important pest in the Molotov Province of the Soviet Union, but is not considered serious elsewhere in the USSR. In France, rather heavy damage occurs sporadically. Adults make round holes in the leaves and larvae attack the roots of the host plant. Although the European potato flea beetle prefers potatoes, it is generally considered a minor pest of this crop in Europe.



Adult of *Psylliodes affinis*

Host Plants - Belladonna, bitter nightshade, black henbane, *Lycium* sp., potato, tobacco, tomato, various other solanaceous plants, and hops.

Distribution - Most of Europe including the USSR and into Siberia.
United States: New York

Life History - Under conditions in France, overwintering adults appear in the latter half of April when they feed on the foliage of potato plants or other hosts. Females deposit eggs in May and these hatch in 6-8 days. Larvae feed on the rootlets and make galleries in the roots. Here they remain almost constantly. Development of larvae to pupae takes about one month. They leave the roots and pupation takes place in the soil a short distance from the host plant. Adults emerge in about 3 weeks and are abundant during July and August. There is one generation a year.

Description - Adult - Length 2-2.8 mm. Ovoid, overall color light tan. Head black, pronotum and elytra tan. Suture of elytra narrowly bordered with brown. Legs tan except hind femur which is black to reddish black and very large. Ventral surface black.

Interceptions - Adults have been taken with dahlia roots from Poland and in a package of rose stock from Germany.

Reference - Balachowsky, A. and Mesnil, L. 1936. Les Insectes Nuisibles aux Plantes Cultivées. Vol. 2:1303-1305.

Prepared in Plant Pest Control Division

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
18(41):965, 1968

HAWAII INSECT REPORT

Turf, Pasture - A GRASS WEBWORM (Herpetogramma licarsisalis) apparently at lowest level on Maui since discovery in March 1968. Damage trace to very light in all previously infested pastures. Parasitism by Trichogramma semifumatum (a minute egg parasite) continued excellent. (Miyahira).

General Vegetables - BEAN FLY (Melanagromyza phaseoli) surveys negative in snap beans in Kula farming area on Maui. Light to medium on snap beans in scattered areas on Oahu and Kauai. (Miyahira, Sato).

Ornamentals - COCONUT SCALE (Aspidiotus destructor) light to medium on coconut leaves at Kaneohe, Sand Island, and Honolulu Airport area during survey on Oahu. Light on hala (Pandanus odoratissimus) and sentrypalm (Howea sp.) at airport. Larvae and adults of Telsimia nitida and Lindorus lophanthae (lady beetles) in all areas. (Funasaki).

Beneficial Insects - SOURBUSH SEED FLY (Acinia picturata) heavy on Pluchea odorata in Kahului, Kihei, and Waihee on west Maui. Infested 98.8 percent of 600 floral heads examined. (Ah Sam). Adults of a SCIOMYZID FLY (Sepedon sauteri) numerous on rice foliage in Wailua, Kauai. This predator of liverfluke snail apparently well established on Kauai; previously noted in Hanapepe, Hanalei, and Wainiha. (Funasaki). MELASTOMA BORER (Selca brunella) caused heavy foliar damage and destroyed many fruits of Melastoma malabathricum in Waiakea-uka area of Hilo, Hawaii Island. Larvae damaging terminal twigs. (Davis). Adults of TACHINA FLIES (Trichopoda pennipes and T. pennipes var. pilipes) moderate in flight and on various flowers at Kula and Pukalani, Maui; one or more eggs on about 90 percent of Nezara viridula adults. (Miyahira, Ah Sam).

Miscellaneous Insects - Larvae of a NOCTUID MOTH (Phlegetonia delatrix) caused much foliar damage to Java-plum (Eugenia cumini) in Honolulu (Palolo Valley), Oahu, and Wailua, Kauai. Larvae collected, reared to adults, and determined by M. Chong. P. delatrix first recorded in State from adults collected at light on Oahu in September 1964. Adults collected since from islands of Kauai and Hawaii. Java-plum first known host in State. (Funasaki).

Weather of the week continued from page 956.

TEMPERATURE: Temperatures averaged above normal over parts of the Great Basin, in New England, along the gulf coast, and in Florida, and below normal elsewhere. Some areas from the lower Missouri River Valley to the middle Appalachians averaged 4° to 7° below normal. The week began sunny and mild over most of the Nation. The Far West cooled somewhat during the week and the Southwest warmed again over the weekend. A cold front pushed into North Dakota and Minnesota early in the week and by the weekend had reached the Gulf of Mexico. Mild, sunny weather preceded the frontal passage but temperatures tumbled sharply as it passed. Temperatures in the central Great Plains dropped 40° to 50° from Wednesday afternoon to Friday morning; for example, from 81° to 32° at Moline, Illinois, during that period. Freezing temperatures occurred as far south as northern Arkansas Friday morning and by Saturday most of Kentucky and West Virginia and nearby portions of neighboring States had experienced freezing weather. Asheville, North Carolina, registered 29° Saturday morning. Over much of the Central and East, this was the first major cold outbreak of the season and brought the coolest weather since the end of May. (Summary supplied by Environmental Data Service, ESSA.)

INSECT DETECTION

New North American Record

EUROPEAN POTATO FLEA BEETLE (*Psylliodes affinis* (Paykull)) - NEW YORK - Collected on bitter nightshade (*Solanum dulcamara*) in Albany and Greene Counties during July 1968. Collected and determined by R.W. Flowers and J.A. Wilcox. Confirmed by R.E. White. (p. 960).

New State Records

A CADDISFLY (*Potamyia flava*) - MARYLAND - Adults collected by J. Hellman in blacklight trap near Fairland, Prince Georges County, August 21, 1968. *P. flava* common in Mississippi Valley, southeast to Georgia. Determined by O.S. Flint. (U. Md., Ent. Dept.).

A BILLBUG (*Sphenophorus venatus vestitus*) - CALIFORNIA - Adults on golf course at Ontario, San Bernardino County. Collected by G. Harper July 30, 1968. Determined by R.E. Warner. (p. 958).

New County Records

WESTERN CORN ROOTWORM (*Diabrotica virgifera*) - ARIZONA - Yavapai County. (p. 958).

ASIATIC OAK WEEVIL (*Cyrtepistomus castaneus*) - MISSOURI - Franklin and Gasconade Counties. (p. 962).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - NEW MEXICO - Hidalgo County. (p. 962).

SOYBEAN CYST NEMATODE (*Heterodera glycines*) - NORTH CAROLINA - Beaufort and Washington Counties. (p. 964).

CORRECTIONS

CEIR 18(40):951 - WHITE-FRINGED BEETLES (Graphognathus spp.) - VIRGINIA - Change D.H. Crown to D.H. *Craun*. (Allen).

LIGHT TRAP COLLECTIONS

	Temperature °F.	Precipitation (inches)	Type of trap BL = blacklight I = incandescent MV = mercury vapor O = other	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	H. zea (bollworm, corn earworm, tomato fruitworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Manduca quinquemaculata (tomato hornworm)	Manduca sexta (tobacco hornworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Spodoptera frugiperda (fall armyworm)	Trichoplusia ni (cabbage looper)	Crops
FLORIDA																								
Gainesville 9/28,10/3			BL	5			1		24		7							1	1	4	36	1		
Monticello 9/26-10/2			BL	383			2			53	9				2	9		77	141	75	10	74	99	
KANSAS																								
Colby 9/28,10/1,10/3			BL	10		122		3			41							6		4				
Garden City 9/30			BL	150		1500		15			250							5	9	75				
Hugoton 10/1			BL	250		2500		25			300							17	13	20				
Tribune 10/1			BL	32		3		1			9							2		3				
MISSISSIPPI																								
Stoneville 9/28-10/4	48-89	0.05	BL	16			4		72	10	1067				2				254	64	125	51	12	
MISSOURI																								
Fair Grove 9/26-10/2				9							155						5	1	15	33		212		
Portageville 9/28-10/4				8							91							1	9	20				
NEW JERSEY																								
Seabrook 9/25-10/2			BL	22							27						10	8	23	48		16	10	
TEXAS																								
Waco 9/28-10/4			BL	12					78	23	122							47	23	56	71	1	76	
WISCONSIN																								
Madison 9/27-10/2			BL	10							5						11	14		42				
Platteville 9/24-10/4			2BL	9							63						88	225		298				

SURVEY METHODS

Selected References for Last Half of 1967

Part XI

Additional copies of Parts I through XI of this bibliography are available from Survey and Detection Operations.

POPULATION MEASUREMENT

CLARK, D. P. 1967. A population study of *Phaulacridium vittatum* Sjost. (Acrididae). Austral. J. Zool. 15(4):799-872.

COLE, W. E. 1967. Sampling biologically in forest insect populations. Ent. Soc. Amer. Ann. 60(4):860-861.
Dendroctonus ponderosae

GABBUTT, P. D. 1967. Quantitative sampling of the pseudoscorpion *Chthonius ischnocheles* from beech litter. J. Zool. 151(4):469-482.

HILSENHOFF, W. L. 1967. Ecology and population dynamics of *Chironomus plumosus* (Diptera: Chironomidae) in Lake Winnebago, Wisconsin. Ent. Soc. Amer. Ann. 60(6): 1183-1194.

MUIR, R. C. 1967. A technique for extracting the damson-hop aphid, *Phorodon humuli* (Schrank) from host samples and for estimating large numbers. East Malling Res. Sta. Ann. Rpt., 54th Ann. Meeting 172-176.
From *Prunus*

THOMPSON, P. H. 1967. Abundance and seasonal distribution of the Tabanidae (Diptera) of the Great Swamp, New Jersey. Ent. Soc. Amer. Ann. 60(6):1255-1260.

WATERHOUSE, J. S. 1967. Population studies of the garden symphylan, *Scutigerella immaculata* (Symphyla: Scutigerellidae). Canad. Ent. 99(7):696-702.

WHARTON, D. R. A., LOLA, J. E. and WHARTON, M. L. 1967. Population density, survival, growth, and development of the American cockroach. J. Insect Physiol. 13(5):699-716.
Periplaneta americana (L.)

FORECASTING

CAMPRAG, D. 1967. Organization of the forecasting and information service of the outbreaks of insect pests and parasites in Poland. Biljna Zastita 11(9):226-231. In Serb.

CAMPRAG, D. 1967. The occurrence of noctuids on sugar beets in 1966 and forecast for 1967. Biljna Zastita 11(6):141-145. In Serb.
Includes *Mamestra brassicae*

KRAMER, K. 1967. Applied entomology in the service of forecasting. Z. Pflanzenkrankh. (Pflanzenpathol.) Pflanzenschutz 74(10):627-634. In Ger., Engl. Sum.

LEWIS, T. and HURST, G. W. 1967. Take-off thresholds in Thysanoptera and the forecasting of migratory flight. *In* Biometeorology 2(2):576-578. (Edited by S. W. Tromp and W. H. Weihe).

REARING

AUCLAIR, J. L. 1967. Effects of light and sugars on rearing the cotton aphid, *Aphis gossypii*, on a germ-free and holidic diet. J. Insect Physiol. 13(8):1247-1268.

BOORMAN, J. 1967. Aseptic rearing of *Aedes aegypti* Linn. Nature (London) 213(5072):197-198.

BOWLING, C. C. 1967. Rearing of two lepidopterous pests of rice on a common artificial diet. Ent. Soc. Amer. Ann. 60(6):1215-1216.

BRANSON, T. F. and ORTMAN, E. E. 1967. Biology of laboratory-reared corn leaf aphids, *Rhopalosiphum maidis* (Homoptera: Aphididae). Ent. Soc. Amer. Ann. 60(5):1118-1119.

BURTON, R. L. 1967. Mass rearing the fall armyworm in the laboratory. U.S. Agr. Res. Serv. ARS-33-117, 12 pp.
Spodoptera frugiperda

CEREZKE, H. F. 1967. A method for rearing the root weevil, *Hylobius warreni* (Coleoptera: Curculionidae). Canad. Ent. 99(10):1087-1090.

CHAMBERS, D. L. and MOFFITT, C. 1967. Improved laboratory methods for rearing the citrus red mite. J. Econ. Ent. 60(6):1748-1749.

DADD, R. H. 1967. Improvement of synthetic diet for the aphid *Myzus persicae* using plant juices, nucleic acids, or trace metals. J. Insect Physiol. 13(5):763-778.

DADD, R. H. and KRIEGER, D. L. 1967. Continuous rearing of aphids of the *Aphis fabae* complex on sterile synthetic diet. J. Econ. Ent. 60(6):1512-1514.

DRIFT, J. W. P. T. VAN DER. 1967. Breeding of *Heterobostrychus aequalis* (Waterhouse) on an artificial diet. Toegepast-Natuurwetensch. Onderz. Nieuws 22(7):299-303. In Dut., Engl. Sum.

DUNWOODY, J. E. and HOOPER, G. H. S. 1967. An artificial medium for rearing *Epiphyas postvittana*. J. Econ. Ent. 60(6):1753-1754.

ECONOMOPOULOS, A. P. and TZANAKAKIS, M. E. 1967. Egg yolk and olive juice as supplements to the yeast hydrolyzate-sucrose diet for adults of *Dacus oleae*. Life Sci. 6(22, pt. 11):2409-2416.

FINNEY, G. L. and BRINKMAN, D. 1967. Rearing the navel orangeworm in the laboratory. J. Econ. Ent. 60(4):1109-1111.

GALFORD, J. R. 1967. A technique for rearing larvae of the smaller European elm bark beetle on an artificial medium. J. Econ. Ent. 60(4):1192.

GALINDO, P. 1967. Preliminary observations on the colonization and bionomics of the crab-hole breeding mosquito *Deinocerites pseudes* Dyar and Knab, 1909. Mosquito News 27(2):187-190.

GARDINER, B. O. C. 1967. Rearing the larvae of *Lonomia cynira* (Saturniidae). Lepidopterists' Soc. J. 21(2):138-140.

GRAHAM, H. M., GLICK, P. A. and OUYE, M. T. 1967. Temperature effect on reproduction and longevity of laboratory-reared adult pink bollworm (Lepidoptera: Gelechiidae). Ent. Soc. Amer. Ann. 60(6):1211-1213.

HARDING, J. A., BRINDLEY, T. A. and DYAR, R. C. 1967. Survival and development of European corn borers fed gossypol in artificial diets. J. Econ. Ent. 60(6): 1764-1765.

HOUSE, H. L. 1967. Artificial diets for insects: a compilation of references with abstracts. Canad. Dept. Agr. Res. Inst. Inform. Bul. 5, 163 pp.

HOUSER, E. C. and WINGO, C. W. 1967. Laboratory culture and biology of *Orthellia caesarion* with notes on determining larval instars. J. Econ. Ent. 60(5):1355-1358.

JORDAN, A. M., NASH, T. A. M. and BOYLE, J. A. 1967. The rearing of *Glossina austeni* Newst. with lop-eared rabbits as hosts. I. Ann. Trop. Med. Parasitol. 61(2):182-188.

KHAN, A. R. 1967. Studies on the rearing, biology and control of the imported fire ant. Diss. Abstr. Sect. B 27(10):3716B-3717B.
Solenopsis saevissima richteri

KHAN, A. R., GREEN, H. B. and BRAZZEL, J. R. 1967. Laboratory rearing of the imported fire ant. J. Econ. Ent. 60(4):915-917.

LAIGO, F. M., HANSEN, H. L. and PASCHKE, J. D. 1967. Continuous laboratory rearing of the imported cabbageworm. J. Econ. Ent. 60(4):1184-1185.

LEWIS, L. F., CHRISTENSON, D. M. and EDDY, G. W. 1967. Rearing the long-nosed cattle louse and cattle biting louse on host animals in Oregon. J. Econ. Ent. 60(3):755-757.

NOLL, J. 1967. A polyhedrosis as the chief limiting factor in the mass rearing of the cabbage moth (*M. brassicae*). Arch. Pflanzenschutz 3(1):27-48. In Ger., Rus. and Engl. Sum.

NORMAN, P. A. and SUTTON, R. A. 1967. Host plants for laboratory rearing of the melon aphid. J. Econ. Ent. 60(5):1205-1207.

PATTON, R. L. 1967. Oligidic diets for *Acheta domesticus* (Orthoptera: Gryllidae). Ent. Soc. Amer. Ann. 60(6):1238-1242.

PELEG, B. A. and RHODE, R. H. 1967. New methods in mass rearing of the Mediterranean fruit fly in Costa Rica. J. Econ. Ent. 60(5):1460-1461.

PROKOPY, R. J. 1967. Artificial diet for apple maggot larvae. J. Econ. Ent. 60(4):1161-1162.

RAWLINS, W. A. 1967. Oviposition by onion maggot adults fed on a chemically defined diet. J. Econ. Ent. 60(6):1747-1748.

ROCK, G. C. 1967. Aseptic rearing of the codling moth on synthetic diets: Ascorbic acid and fatty acid requirements. J. Econ. Ent. 60(4):1002-1005.

ROELOFS, W. L. 1967. Agarless medium for mass rearing the red-banded leaf roller. J. Econ. Ent. 60(5):1477-1478.

ROLOFSON, G. L. and BISHOP, J. L. 1967. DDT and related compounds in dog food and CSMA media used in insect rearing. J. Econ. Ent. 60(4):1186-1187.

SAUNDERS, J. L. and KNOKE, J. K. 1967. Diets for rearing the ambrosia beetle *Xyleborus ferrugineus* (Fabricius) in vitro. Science 157(3787):462-463.

SCHMIDT, C. D., HARRIS, R. L. and HOFFMAN, R. A. 1967. Mass rearing of the horn fly, Haematobia irritans (Diptera: Muscidae), in the laboratory. Ent. Soc. Amer. Ann. 60(3):508-510.

STERNLICHT, M. 1967. A method of rearing the citrus bud mite (Aceria sheldoni Ewing). Israel J. Agr. Res. 17(1):57-59.

STRONG, R. G., SBUR, D. E. and PARTIDA, G. J. 1967. Rearing stored-product insects for laboratory studies: Lesser grain borer, granary weevil, rice weevil, Sitophilus zeamais, and Angoumois grain moth. J. Econ. Ent. 60(4):1078-1082.

UILENBERG, G. 1967. Amblyomma chabaudi Rageau, 1964 (Ixodidae): laboratory rearing, description of larvae and supplementary observations of the nymphs. Ann. Parasitol. Humaine Comp. 42(3):343-351. In Fr., Engl. Sum.

VANDERZANT, E. S. 1967. Wheat-germ diets for insects: Rearing the boll weevil and and the salt-marsh caterpillar. Ent. Soc. Amer. Ann. 60(5):1062-1066.

WEISMANN, L. and PODMANICKA, D. 1967. Artificial diets in the rearing of the larvae of Barathra brassicae L. Biologia (Bratislava) 22(9):659-667. In Ger.

EQUIPMENT AND TECHNIQUES

BARTLETT, F. J., MITCHELL, J. A. and SHAW, Z. A. 1967. Plastic pots compared with clay pots for rearing white-fringed beetle larvae. J. Econ. Ent. 60(6):1767-1768.

BOLES, H. P. and MAHANY, P. G. 1967. A method of determining rate and time of egg deposition by insects. J. Econ. Ent. 60(6):1763.

COLE, W. E. and WEENIG, C. 1967. A technique for inducing attacks and mating of the mountain pine beetle, Dendroctonus ponderosae (= monticolae) (Coleoptera: Scolytidae). Ent. Soc. Amer. Ann. 60(4):857-858.

FEENEY, A. M. 1967. An improved method for extracting leatherjackets from soil and an evaluation of the Maercks method. Roy. Dublin Soc. Sci. Proc. Ser. B 2(9):75-79.

HAWKES, R. B. 1967. A portable unit for ventilating insect cages. J. Econ. Ent. 60(6):1756-1758.

NADEL, D. J., MONRO, J., PELEG, B. A. and FIGDOR, H. C. F. 1967. A method of releasing sterile Mediterranean fruit fly adults from aircraft. J. Econ. Ent. 60(4):899-902.

PATANA, R. 1967. A pressure paint tank modified for use as a dispenser for insect diets. J. Econ. Ent. 60(6):1755-1756.

RAY, S. K. 1967. A new technique of mounting aphids. Indian J. Ent. 29(1):92.

RICHARDSON, H. P. and WESTDAL, P. H. 1967. Disposable cage and pot for virus transmission studies with leafhoppers. Canad. Ent. 99(7):769-770.

STEINER, O. D. and MARTIN, M. M. 1967. An apparatus for collecting ants in large quantities. J. Econ. Ent. 60(4):1169-1170.

TATE, N. L. and BEDARD, W. D. 1967. Methods of sexing live adult western pine beetles. J. Econ. Ent. 60(6):1688-1690.

THEAKER, T. L. and TONKS, N. V. 1967. A method for rapid mass collection of the garden symphylan from laboratory cultures. J. Econ. Ent. 60(4):1191.

TRAPS

BRADLEY, J. R. 1967. Oriented movement of the boll weevil in response to trap crop plantings, foliage color and sex pheromone. Diss. Abstr., Sect. B 28(5): 1973B.
Ecological study of *Anthonomus grandis*

COSTA, C. L. and LEWIS, T. 1967. The relationship between the size of yellow water traps and catches of aphids. Ent. Expt. et Appl. 10(3/4):485-487.

EVANS, D. A. and MEDLER, J. T. 1967. Flight activity of the corn leaf aphid in Wisconsin as determined by yellow pan trap collections. J. Econ. Ent. 60(4): 1088-1091.

FALCON, L. A. and COAUTHORS. 1967. Light traps as detection devices for moths of cabbage looper and bollworm. Calif. Agr. 21(7):12-14.
Trichoplusia ni and *Heliothis zea*

HARRELL, E. A., YOUNG, J. R. and COX, H. C. 1967. Fan vs gravity light traps for collecting several species of Lepidoptera. J. Econ. Ent. 60(5):1474-1476.

HOLDEN, P. B. and MERRY, E. R. 1967. A study of night-flying Lepidoptera. Entomologist (London) 100(1247):85-93. Map.
Collected with mercury vapor light.

KIMERLE, R. A. and ANDERSON, N. H. 1967. Evaluation of aquatic insect emergence traps. J. Econ. Ent. 60(5):1255-1259.

LAMBERT, H. L. and FRANKLIN, R. T. 1967. Tanglefoot traps for detection of the balsam woolly aphid. J. Econ. Ent. 60(6):1525-1529.

LOSCHIAVO, S. R. and ATKINSON, J. M. 1967. A trap for the detection and recovery of insects in stored grain. Canad. Ent. 99(11):1160-1163.

ROGERS, C. J., SCHOEPPNER, R. F. and WHITSEL, R. H. 1967. A wind-oriented attractant trap for gnats. J. Econ. Ent. 60(4):1190-1191.

ROWLEY, W. A. and JORGENSEN, N. M. 1967. Relative effectiveness of three types of light traps in collecting adult *Culicoides*. J. Econ. Ent. 60(5):1478-1479.

SCHOEPPNER, R. F. and WHITSEL, R. H. 1967. An improved carbon dioxide sticky cylinder trap. Mosquito News 27(2):185-186.
Leptoconops torrens

SOMMERMAN, K. M. 1967. Modified car-top insect trap functional to 45 mph. Ent. Soc. Amer. Ann. 60(4):857.

SPARKS, A. N. 1967. Large-scale field evaluation of electric insect traps to reduce bollworm populations in Reeves County, Texas. U.S. Agr. Res. Serv. ARS-33-119, 16 pp.
Light traps for control of *Heliothis zea* and *H. virescens*

SPARKS, A. N., WRIGHT, R. L. and HOLLINGSWORTH, J. P. 1967. Evaluation of designs and installations of electric insect traps to collect bollworm moths in Reeves County, Texas. J. Econ. Ent. 60(4):929-936.

STEWART, P. A., LAM, J. J., JR. and HOFFMAN, J. D. 1967. Activity of tobacco hornworm and corn earworm moths as determined by traps equipped with blacklight lamps. J. Econ. Ent. 60(6):1520-1522.

SVETLICHNYI, S. K. 1967. Traps for garden fleahoppers. Zashch. Rast. 4:49-50. In Rus.
Halticus bracteatus on grass

WOLF, W. W., KISHABA, A. N., HOWLAND, A. F. and HENNEBERRY, T. J. 1967. Sand as a carrier for synthetic sex pheromone of cabbage loopers used to bait black-light and carton traps. J. Econ. Ent. 60(4):1182-1184.

YERINGTON, A. P. 1967. Insects attracted to argon light traps in California wineries. Calif. Vector Views 14(8):52-55.

ZETTLER, F. W. 1967. Winged aphids caught on traps in bean fields in central New York. J. Econ. Ent. 60(5):1320-1323.

ATTRACTANTS

BERGER, R. S. 1967. Sex attractant for insects. Highlights Agr. Res. 14(4):4.

BORDEN, J. H. 1967. Factors influencing the response of *Ips confusus* (Coleoptera: Scolytidae) to male attractant. Canad. Ent. 99(11):1164-1193.

DRANSFELD, H., GREEFF, K., HESS, D. and SCHORN, A. 1967. A synthetic attractant for the male spruce budworm moth (*Choristoneura fumiferana* (Clem.). Experientia 23(5):377-378.

GUERRA, A. A. and OUYE, M. T. 1967. Catch of male pink bollworms in traps baited with sex attractant. J. Econ. Ent. 60(4):1046-1048.

HAMMOND, A. M. 1967. Bioassay and field evaluation of the sex attractant in *Diatraea saccharalis* (F.). Diss. Abstr., Sect. B 28(1):221B-222B.

HARDEE, D. D., MITCHELL, E. B. and HUDDLESTON, P. M. 1967. Laboratory studies of sex attraction in the boll weevil. J. Econ. Ent. 60(5):1221-1224.

HAZARD, E. I., MAYER, M. S. and SAVAGE, K. E. 1967. Attraction and oviposition stimulation of gravid female mosquitoes by bacteria isolated from hay infusions. Mosquito News 27(2):133-136.
Aedes aegypti and *Culex pipiens quinquefasciatus*

MADSEN, H. F. 1967. Codling moth attractants. Pest Art. and News Sum. 13(4):333-344.

ROELOFS, W. L. 1967. Possibilities of sex attractants in controlling fruit insects. N. Y. State Hort. Soc. Proc. 112:163-166.

SCHRECK, C. E., GOUCK, H. K. and SMITH, N. 1967. An improved olfactometer for use in studying mosquito attractants and repellents. J. Econ. Ent. 60(4):1188-1190.

YINON, U. and SHULOV, A. 1967. A bioassay of the pheromone of *Trogoderma granarium* males as an attractant for both sexes of the species. Ent. Expt. et Appl. 10(3/4):453-462.

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